Interview with the President

Roger Harker, Bently Nevada's President and Chief Operating Officer, provides a revealing glimpse into our mission and vision – what it is, how we'll accomplish it, and the people who will take us there

"...this is a time of tremendous innovation and forward progress for Bently Nevada ..."

Q **Roger, your career at Bently Nevada spans more than 30 years. Talk a bit about our early days and how we've changed as a company.**

A I don't like to focus on our past...not because it isn't interesting or that our heritage hasn't helped shape us as a company, but because what is most important to our customers is the present and the future...not the past. Customers want to know that we are providing value and solving existing problems for them *today*, and that we are looking at *tomorrow's* problems and working on solutions. We are offering them leadership into the next century. We're doing all those things and more.

The areas I'm most passionate about today fall into three basic categories...

First, we are teaching customers to *manage their machines*...not just protect them. Second, we are moving beyond focusing primarily on the critical machinery in customers' plants and *beginning to offer solutions for their less critical, smaller machines* as well. Third, we are *expanding our service offerings* in some very significant ways.

With respect to the past, I will say this: this is a time of tremendous innovation and forward progress for Bently Nevada – it's very reminiscent of our early days. Back then, we were teaching customers the value of putting our probes in their machines and focusing on making our machinery protection systems work well. We were rewarded with tremendous growth and customer loyalty because this met a genuine need in the industry. Today, a new opportunity exists...teaching customers to manage their machines as well as protect them...and we are making excellent progress.

Q **Not all our readers may be familiar with the term "machinery management." Can you elaborate on that?**

A Machinery protection is really the prime function of our monitoring systems. As customers began to use the systems for automatic shutdown of their machines, we spent significant effort making these systems more reliable and easier to use. We've been very successful. There's no question that monitors are a huge part of what we are today. However, they are still really just a method of providing alarms or automatic machine trips when machine conditions degrade to severe levels.

Our customers are beginning to realize that our online diagnostic systems are really the next "frontier" and can, in many cases, provide early warning of what is happening with the machine...long before the protection system alarm levels are exceeded. So, machinery management is really the data and information we provide that allows customers to make better decisions about how they run their machines and their plant.

Q Talk a bit more about the distinction between machinery protection and management.

A Alarms from the protection system occur when a problem is well-developed. Generally, it is too late to do anything proactive. In contrast, our machinery management systems offer continuous ***decision support™***, and give people information they can act on – ***Actionable Information™*** – instead of just more data that needs to be interpreted. The phrase we've been using is ***"Move Information, Not Data™,"*** and it exactly conveys our emphasis and what our systems can do.

"It's the difference between being proactive – preventing damage – and reactive – responding to damage."

Q Who gets this machinery management information?

A In the past, we provided plots and data to the machinery experts. We still do this, but knowledgeable machinery people are getting scarce. One way we can help this acute shortage is to show Operations how they are running and stressing their machines rather than providing alarms *after* damage has occurred. It's the difference between being proactive – *preventing* damage – and reactive – *responding* to damage.

We propose to do this by providing actionable information to operators…they're the ones controlling the process and in the best position to take real-time corrective action when a machine is being stressed unnecessarily. We've been using the term "asset stress feedback" because – with training – operators can actually use this information to adjust the process and balance the needs of the machinery with their production goals. We are doing this today with several customers, and the results have been outstanding.

Q There's a lot of talk today about "asset management." Does Bently Nevada have a role in this?

A Yes. As you mentioned, the term being used in industry right now is "asset management." It is not a new idea, but it has everyone's attention because managing assets better is a way to stay competitive. Bently Nevada addresses a very specific subset of these assets: rotating and reciprocating machinery.

Many of our customers are in the business of producing commodity products – gasoline, ethylene, and electricity. That means anything we can do to help them lower production costs, increase production yields, and increase process availability is very important to them. When demand exceeds supply, ability to produce the product can offer a substantial profit opportunity. Machine availability is critical in these situations. An effective machinery management program can play a key role to ensure machine availability.

This places Bently Nevada in a very strategic position to help our customers improve their competitive position.

Q What are customers telling us about the role of machinery management?

A That it is *extremely* important to them. Customers tell us all the time that better machinery information can make the difference between keeping their process running or having to shut it down or scale it back. We can do that for them with information from our machinery management systems.

Q What industry forces are causing this interest?

A Well, consider a few of the trends we hear from customers:

- More global competition in their businesses
- Intense pressure for them to reduce costs
- Fewer qualified people to get jobs done
- Benchmarking for improvement
- Extending time between inspection/overhauls
- Reducing overhaul and maintenance costs

- Improving safety, reliability, and availability
- Managing machinery risk and insurance cost

We understand these key problems and can help our customers address these trends and meet their business objectives.

Q **What role will machinery management play in Bently Nevada's future?**

A A very big one. It's shifting us from a hardware company, known for vibration monitoring and diagnostics, to a company that provides machinery information management. A significant part of being able to manage a machine's condition is the ability to supply ***actionable information to the right people at the right time***™.

We're not just providing relays to an emergency shutdown system anymore. We have to send and receive information to and from a variety of places – process control systems, human machine interfaces, process historians, computerized maintenance management systems, e-mail and paging systems – and make it all work together. It has given birth to our Project Management and System Integration Engineering services groups.

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Q **Is this changing the way customers perceive us?**

A Absolutely. People used to regard us as a "subsystem" in the plant, but our systems are now being viewed as "peers" to machine control systems. We are basically an information server, and that's exactly what we intend to be – a provider of *information*, not just data. It has all come about as a result of our focus on machinery management.

Integration of our information and data with the rest of the plant is a tremendous challenge for us. We're focusing heavily on the ability to correlate process information with our machinery information because correlation is such a powerful tool. We can now see how small process changes can make huge differences in the stress on a machinery asset... things like minor swings in process fluid temperatures that are inconsequential to the process may be absolutely critical to a pump and whether it cavitates or not.

This illustrates why Operators can have such a key role in machinery stress management. We need to give them actionable information – and we're doing it.

Q **You seem quite optimistic about the opportunities.**

A I am – and with good reason. We've met with our counterparts in the process control world. We both serve the same industries and have many customers in common. They see a very similar situation facing customers today compared to what existed in the process control industry ten years ago.

Computerized process control really took hold in the early 80's. In the late 80's, customers moved beyond controlling the process to optimizing it. Many of them have taken process control and optimization about as far as they can.

Now, their attention is shifting to the assets that make the process run. What can they do to make the assets run more reliably? More efficiently? The goal is now to balance the requirements of the process with the requirements of the assets and optimize the entire business, not just the process or the assets in isolation from one another.

When we look at the tremendous global acceptance that computerized process control and optimization has enjoyed, I think you can see why we are anticipating machinery management to be such a growing part of our customers' business in the future. The opportunities for Bently Nevada are really very exciting.

Q **You've spent a significant part of your time the last several years traveling globally and presenting the company vision to our customers. In it, you've used a new phrase – something you call "managing below the alert light." What do you mean by that?**

A It's really just a way of referring to machinery management. Our first step as a company was to put continuous plots and data into our cus-

tomers' hands. That has helped them solve some problems, but it has also created some.

Namely, there are no longer enough people at most of our customers' plants to manually review the data and plots from online systems. They're trying to be much more "event driven," since it's not particularly productive to look at data that hasn't changed from one day to the next. Only the data that shows change is of value.

The protection system generates "alarm events," but typically these alarm levels are set purposely high so that machine shutdown only occurs when things have progressed to "crisis" levels. Actually, that's a good way to think of it – crisis – because that's what a protection system alone leads to: crisis management.

What we're doing for customers now is providing them with machine condition advisories that occur long before our first-level "alert" alarms are triggered in the machinery protection system. I don't know, maybe we should call it "stress management" instead of "machinery management." I think we can do a lot to reduce the level of stress in a typical customer's plant when machine problems occur today.

Q What about the role of "expert systems?"

A We refer to these systems – as **decision support™** systems. That term communicates better because that's really what they do…provide prioritized actionable information – information that the target individual can use. What is actionable to an Operator is different from what is actionable to a Machinery Engineer. Our decision support systems minimize the need for additional interpretation or data reduction. Instead, they give people simple-to-understand advisories they can act on and support their ability to make rapid and high-quality decisions about the plant machinery assets and processes.

A big part of our vision centers around Bently Nevada's decision support system, Machine Condition Manager™ 2000.

Q How is the concept being received?

A Very well. It's not surprising our customers have the same business problems around the world. They are operating with fewer people; their machines are running harder, and they want to get the maximum useful life out of the machine before they perform maintenance on it.

I think I'll always remember one customer's response in particular. A question I often like to ask is, "What is causing you pain, and how can we help?" This particular customer's response was very enlightening: "I'm planning a plant turnaround. I need to determine what needs maintenance, what can be left alone, and, if left alone, whether it will run to the next turnaround or not."

This clearly indicates the paradigm is changing because they can no longer inspect everything…they have to go to a condition-based philosophy.

Q What does the future hold for the company?

A Well, we've talked a lot about machinery management. Our vision for machinery management is that it won't be the manual process of "surfing" plots and data…it will be a decision support system, that encompasses many more types of machines. I refer to it in my vision presentation as "prioritized, actionable information for all your machinery." We give you information you can act on; we prioritize it, and we do it for all the rotating and reciprocating machinery in your plant.

We have quite a few of the key machines covered already, but it is primarily the critical machinery that we're looking at today. It's a good starting place, but, frankly, the critical equipment often represents only a tiny fraction of the total number of rotating and reciprocating machines in the customer's plant.

Managing the sheer volume of these other, less critical machines still requires significant labor. Eventually, we've got to get all the customer's machines into the mode of "decision support" machinery management.

Another reason decision support systems are so necessary is the tremendous loss of machinery expertise

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we are seeing in many plants. There is little or no "corporate learning" taking place because, just when people begin to figure the problem out, they're off to the next project or another company. Our decision support system gives companies a place to embed their learning and knowledge about machinery, so when people leave, the knowledge stays. This is true not just for Machinery Engineers...but for plant Operators and management personnel as well.

*"...we've added the word "all"...**all** your machinery...the significance is actually very profound."*

Q Let's talk about another part of Bently Nevada's evolution...our mission statement.

A Many customers are familiar with our business card where it says "Helping you Protect and Manage *all* your Machinery." It's become a very powerful communicator, both within the company and with our customers, because it describes so succinctly what we do. However, many customers aren't aware that this is our mission statement.

Q Isn't it kind of "trendy" for companies to put their mission statement on business cards these days?

A I suppose it is. But how many of them can put it on the *front* of their card and still have room for the other stuff? We can.

Q We've recently changed our mission statement. Why?

A At first glance, the change appears minor. We call it "the little red all" because we've added the word "all"...*all* your machinery. But the significance is actually very profound. We've been known with many customers as "the critical machinery company" because our solutions have most often been justified on large, critical machinery.

That's good, but it has tended to pigeonhole us as a company that is only interested in one type of machinery. There is a lot of machinery in our customers' plants, and they are telling us that they would like a single, integrated system to manage their machinery.

That's what our System 1™ platform is all about...an integrated system that unifies the online, off-line, critical, and general-purpose worlds.

Q Does that mean Bently Nevada is going to focus more on general-purpose machinery in the future?

A Absolutely. But it doesn't mean we're neglecting our traditional strength – rotor dynamic understanding of fluid-film bearing turbomachinery.

It simply means we plan to *extend* our solutions to address the general-purpose machines – the ones that typically have smaller horsepower ratings and rolling element bearings – with both off-line and online solutions.

In fact, we already have an online solution that was very revolutionary when first introduced – Trendmaster® 2000.

Q Are we suggesting that online isn't working for this class of machines?

A No. Actually we're saying just the opposite: the future of machinery management is "online" for a larger proportion of the total machinery population in a plant.

Q Then why the need for "off-line" solutions?

A Mainly because there will always be those machines for which online solutions won't be economically justifiable. The key is to have a system that supports all forms of data acquisition: online, off-line, scanning, continuous. That's really at the heart of what we are saying with "all your machinery" and with System 1.

Q Anything else associated with the word "all" and its significance?

A Yes, it has to do with the scope of services we offer. We have a reputation as a supplier of quality instrumentation and of machinery understanding as a core competence. Our services, until recently, were seen largely as after-the-sale support activities, such as calibration and repair. I think a key realization for us was that our products don't just start delivering value right out of the box...I mean somebody has to install them and integrate them with the maintenance and process control systems. In many cases, the people installing and integrating our systems have less knowledge about our products and how they fit into the control and information hierarchy in the plant than we do. It is natural that we move into the project management and systems integration businesses. It's one of those things that, after you do it, seems so obvious in retrospect.

"Most successful companies do this...they don't predict the future as much as they help create the future."

Q We talked earlier about machinery management. How does this tie into our expanded scope of service offerings?

A We have a class of customers whose businesses involve machines, but who do not consider machinery diagnostics and management to be a desirable or necessary core competence. Their ability to outsource this is at the heart of a growing market trend for certain industries.

I guess it is really just recognition of why people buy products from Bently Nevada in the first place...they want what our products deliver – machinery protection and management value. In some cases, it makes sense to sell the results rather than the tools. We're doing that right now at a number of locations globally. We expect this aspect of our services business to grow.

One of the enabling technologies allowing us to provide this service is remote access...it allows us to dial into customers' sites and "bring the machine to us" rather than us traveling to it. We've been saying it for a long time now – "Move Data, Not People®" – and this is exactly what remote services contracts are all about.

A number of forward-looking machinery manufacturers have developed programs of remote machinery management based on Bently Nevada tools. This enables them to provide the users of their machines with a rapid, high-quality, low-cost service that maximizes machine availability while minimizing costs of maintenance. As industry shifts focus from lowest initial cost to lowest life cycle cost, this kind of remote support will be mandatory.

Q We've talked quite a bit about products and services. What about our people?

A One of the key things we have accomplished is developing a *team* of highly competent and dedicated people...I mean people who are *passionate* about our business and our culture of "taking excellent care of the customer."

These people know how to manage a world-class company and how to grow the business. I'm extremely proud of what they're achieving for us.

Bently Nevada has nearly tripled in size over the last ten years. I think that speaks well of our people, particularly when you consider that many regarded our market as "mature" with little room for growth. We've seen the opportunity to grow beyond machinery protection to machinery management, and we're seizing it.

Another area in which we are developing people is the product development process. We have recently gone through and revised the process...gotten more people involved in it and worked hard to ensure the products we are developing are linked to a broader overall business strategy – not just a collection of good, but unrelated, product ideas. It is exposing a wider group of people in the company to our strategy and requiring them to view the world from the customer's perspective. We are a stronger and more responsive company as a result.

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Q Any closing thoughts on the next ten years?

A Our company culture is one that looks ahead. For example, when Don Bently is asked about company performance for the next quarter, he often says, "you mean the next quarter *century*?" So, there you have it – we are continually looking beyond the immediate horizon. Most successful companies do this…they don't predict the future as much as they help *create* the future.

For example, we have product plans that look three to five years into the future. We know how the customer needs are evolving; we know how we plan to address them, and we know how we will get there.

I'd look for the next ten years to be even more exciting than the last ten because I think there's a huge untapped need for customers to get a lot more from their machinery assets, and we are in a good position to help them.

I fully expect customers to use machinery management as a strategic tool to improve their competitive position. Use of online systems will grow, especially on smaller, less critical machines. You are going to see more of a true engineering services company evolve rather than a company that just supplies parts or components, such as "transducers" or "monitors." We are really in the business of solving machinery problems… not just providing software and hardware.

Finally, a concept that has very important ramifications – Dynamic Stiffness – will be applied much more proactively in the market during the next decade.

Don (Bently) and Agnes (Muszynska) did some pioneering work in the early 80's that resulted in a vastly improved algorithm for Dynamic Stiffness. In fact, Dynamic Stiffness was the theme of Don's keynote address at this year's Texas A&M Turbomachinery Symposium back in September.

Look for us to really begin incorporating the results of this work in our products and services. It has very practical applications for turbomachinery…things like perturbation of running machines with different excitations to accurately determine stability margins. For smaller, rolling element bearing machinery, there are practical applications as well – like improved understanding of allowable casing vibration amplitudes, based on engineering principles. We can do this by looking at vibration *and* stiffness and deriving the forces acting on these machines. It's a much better approach than the rule-of-thumb velocity severity charts used today.

These are a few of the changes I expect to see over the next decade. But, one thing won't change: we will remain focused on what we do best… "Helping you Protect and Manage *all* your Machinery®."

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for it.

Fundamentally, money can be *anything of value* that can be stored away, and, when recovered, still has value in exchange for other goods or services. You can carry it to any part of the world and it will have some value. It is usually simple for you to set a value on it. Of course, many transactions occur nearly instantaneously by electronic money transfers throughout the world. Just because some transactions can occur much quicker than in the past, this fundamental nature of money still holds true.

Supply and demand for the goods and services people need will continue, despite currency fluctuations. I was reminded of this again recently by Bently Nevada's "sister" company, Bently Agridynamics. As you may know, U.S. agricultural producers have enjoyed large crop yields this year, which, of course, reduces the commodity price. While Bently Agridynamics produced over 50,000 tons of wet silage (haylage) this year, we anticipated (and thus contracted) to sell only 40,000 tons. Because this hay is in high demand, it was an excellent bonus crop, and we were able to sell the rest of it at a decent price. Animals love to eat it. It smells sweet, tastes good, and is very nutritious. To make matters even better, the demand is local - our shipping distance is usually within 30 miles. Next year we may produce up to 60,000 tons of this wet haylage.

At Bently Nevada, we carefully consider the global picture as we plan for the future. In spite of the present uncertainty in virtually every nation's economy, the long-term outlook for business is good. I am convinced that the market for Bently Nevada's products will remain strong because we provide goods and services with intrinsic value, just as our customers do. As in the haylage example above, as long as there are people, there will be a need for the products and services Bently Nevada and its customers provide. The key is to build and invest wisely in those things that have intrinsic value. This has been, and continues to be, Bently Nevada's strategy for the future.

For additional reading material, refer to *Extraordinary Popular Delusions and the Madness of Crowds*, a classic originally written in 1841 by Charles Mackay. It has been republished numerous times and is currently available at bookstores internationally.